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No Days 2, 5 or 6

FOR INTERNAL ROUTING ONLY

CODE	NAME	CODE	NAME
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* GPO : 1966 O-797-276

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UNCLASSIFIED WHEN DETACHED FROM CLASSIFIED MATERIAL

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03 14 40 12 CDR What?

03 14 40 13 CMP 87:19.

03 14 40 16 CDR Yes. What were the gimbal angles there? 180, 8 -
See, it's about the same. And the horizon was what? 1.2?

03 14 40 22 CMP Degrees.

03 14 40 23 CDR Okay, minus 3, right? So, we'll get the - -

03 14 40 24 CMP ...

03 14 40 25 CDR This is the picture it's going to be right now.

03 14 40 26 CMP 52.9.

03 14 40 27 CDR Huh?

03 14 40 29 CMP 52.9.

03 14 40 31 CDR Yes. That's ours - The other one was 1.8.

03 14 40 34 CMP I've got to update this one.

03 14 40 35 CDR Yes, but we'll see - see, what I'm saying is we'll
see just as we come around into the - into the sun
now, we should see just the way it's going to be. See
what I mean?

03 14 41 06 CMP Checking that boresight star is going to be kind of
difficult.

03 14 41 08 CDR Yes, you're looking right into the earth's - the earth.
And it looks like the sun's going to be right in our face,
too.

03 14 41 27 CDR You can probably check your star through the sextant
while we're on the other side. Maybe.

03 14 41 35 CMP Well, if you maintain the same position we're burning
as we go around - -

03 14 41 38 CDR Unless the platform drifts.

03 14 41 40 CMP - - I'll check it - It was like this. If we get a good
enough - well, we won't though, see? We go around like
this. I could check it when you're over here. Maybe I can.

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03 14 42 05 CDR We want to make sure that we're burning the way we're going, too. You know?

03 14 42 09 CMP Yes.

03 14 42 35 CDR Okay, now we're on - I think you're supposed to go MANUAL on the other one, first. Yes.

03 14 42 51 CMP That's D.

03 14 42 53 CDR I don't think that's any good. That's a good one.

03 14 42 58 CMP That's C.

03 14 43 01 CDR C. Houston, how do you read Apollo 8 on OMNI C?

03 14 43 09 CDR Thank you.

03 14 43 23 CMP Hey, look it. If you get to this attitude -

03 14 43 28 CDR Yes?

03 14 43 29 CMP That's inertial, right?

03 14 43 30 CDR Yes.

03 14 43 31 CMP It shouldn't make any difference what REV we're on.

03 14 43 34 CMP As far as I'm concerned, - -

03 14 43 35 CDR ... earth, moon, or what?

03 14 43 36 CMP No, I mean checking the boresight star.

03 14 43 39 CDR Huh?

03 14 43 40 CMP Checking the boresight star.

03 14 43 42 CDR But it isn't all - This isn't always the same - Yes, you can take the difference - -

03 14 43 45 CMP Oh, oh, oh, you're splitting the difference? Okay.

03 14 43 47 CDR Yes.

03 14 43 51 CDR Bill, where are you?

03 14 43 52 LMP Right under here.

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03 14 43 53 CDR Okay, you're not - Are you under me?

03 14 43 54 LMP Yes.

03 14 43 55 CDR Oh, I'm sorry. I didn't want to hurt you. I didn't.
Huh? Good.

03 14 44 11 CMP Look for hardware junk that's floating around.

03 14 44 42 CMP (Singing)

03 14 45 08 CMP Yes. Need some help down there?

03 14 45 47 CDR See, here we are right now, right where it ...

03 14 45 59 CMP I'll be able to check it back here.

03 14 46 02 CDR Think so?

03 14 46 03 CMP Well, if we come up like this.

03 14 46 05 CDR Yes. Hey, look at that - Earthshine from somewhere.
Oh, my gosh, look you can see the - Hey, look right
ahead there. There's a star.

03 14 46 18 CMP I can't tell.

03 14 46 20 CDR Son of a bitch, we're going backwards.

03 14 46 25 CMP Yes.

03 14 46 27 CDR What time is this post burn supposed to be?

03 14 46 37 CMP You're right. They're coming up this way.

03 14 46 38 CDR Huh?

03 14 46 39 CMP If you're looking like that, they're coming up this way.

03 14 46 42 CDR From underneath.

03 14 46 49 CDR What? I don't see that.

03 14 46 59 CDR We're going to burn out this way, I guess, huh?

03 14 47 02 CMP But on the other side, right?

03 14 47 04 CDR Yes.

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03 14 47 05 CMP So it'll be upside down - We'll be upside down, forward. Okay.

03 14 47 09 CDR What time is that supposed to be? 27 - 87 what? Yes. Yes, yes, yes, we're alright.

03 14 47 21 CMP Well, it ought to be 87:19.

03 14 47 27 CDR 87:19, huh?

03 14 47 40 CMP Roger.

03 14 47 57 CDR I'm going to take a leak, a little leak would feel good.

03 14 48 05 CMP ... went floating by here.

03 14 48 07 CDR Huh?

03 14 48 09 CMP A bunch of crap just went floating by.

03 14 48 17 CDR Where are you, Bill?

03 14 48 35 CMP Here's a little piece that got away from somebody.

03 14 49 29 CMP Okay, we're maneuvering up, Bill - Frank. You see?

03 14 49 51 CMP You want to leave these suits in the L-shaped bag?

03 14 50 36 CMP What say? Where? The tape? With the helmet? The helmet?

03 14 51 52 CMP (Sneeze)

03 14 52 17 CC Apollo 8, everything looks good going over the hill.

03 14 52 19 CMP Roger, Ken. Thanks a lot. We'll see you around the next pass. Well, just have our TEI update for us ready early, okay?

03 14 52 26 CC Roger.

03 14 52 51 CMP (Singing)

03 14 53 00 CMP What did you say? 89. However, we have - we're checking an 87 one, because it's going to be almost similar, to see what our attitude's going to be like.

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03 14 53 16 CMP Yes.

03 14 53 20 CMP Where are you going to put the food after you make it?

03 14 53 23 CMP I'm not going to make mine until after the burn.

03 14 53 34 CMP ... Oh.

03 14 54 52 CDR Did you get everybody out a meal, Bill?

03 14 54 55 LMP I'm going to.

03 14 55 06 CMP Here - Boy, there's some things in my pocket they don't know about.

03 14 56 20 CMP I wouldn't say this was too good, would you?

03 14 56 40 CMP Anybody care to brush their teeth?

03 14 57 01 CMP We are maneuvering now, aren't we? I mean, you know, with respect to the -

03 14 57 08 CMP I say, our spacecraft is maneuvering with respect to the -

03 14 57 14 CMP What did I say that TEI 9 time was?

03 14 58 03 CMP 87:19; that's - 22 minutes from now, 21 minutes from now. That's a TI 9 burn, which is the - one REV before this one - I want to see what our attitude is going to be. Here, you want some toothpaste? Huh?

03 14 58 55 CMP I'll get them; I'll get them. You might hit the IMU switch.

03 14 59 09 CMP Here you go, Bill.

03 14 59 25 CMP 87:19.

03 14 59 34 CMP We're just - Hold on just a second.

03 15 00 58 CMP Take a look at this - at your window position. We're at about - Let's see, T_{ig} - was it T_{ig} minus 2, that other one? 87:17? 87:17, your T_{ig} position, your window position? Okay, it's in the - it's in the update book. Right up there. Yes?

03 15 02 57 CMP What's that?

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03 15 03 07 CMP Let me see.

03 15 03 20 CMP Which is which? The moon is darker than the sky.

03 15 03 42 CMP So, who turned on the light?

03 15 03 55 CMP Well, I think we're in the proper position, though.

03 15 04 00 CDR Why don't you check to make sure we're still ... posigrade?

03 15 04 32 CMP Supposed to be stars there.

03 15 04 44 CMP Man, I've got to get that star check early. I'll never get it this way. I have to get that star check early to - you know - I mean I - It can't be too early because the moon will be in the way, but it's got to be early enough so I can see.

03 15 05 00 CMP Okay. Hey, the DAP load ought to be pretty good, huh? You see if the DAP load changed any.

03 15 05 17 CMP Huh. ... load the DAP. Huh? You want this display in the ... position? Okay. Want to turn up your display just a little bit? Okay.

03 15 05 53 CDR How are the boilers working, Bill?

03 15 05 57 CMP Okay, that's good for four quads. That's C is DAP; A, B, C, D. Right. Okay. Proceed. Zero is - Oh, the second one? The second one is the roll quad ... Okay, 45821, 45597. 45597. Alright, well, it went up two digits. I'll try it here now. That's already been done. 42 is Peacock.

03 15 08 29 CMP (Singing)

03 15 08 37 CMP Where are you?

03 15 08 54 CMP (Yawn) ... 87 - 9 - 19. 87 - 9 - Wait a second, that's - For this time, it's 87:19. Do you have a good horizon? I see horizon right here.

03 15 09 28 CMP Well, I mean, where - Do you see the horizon at all?

03 15 09 36 CMP Hey, I don't want to burn into it.

03 15 09 43 CMP Well, I see something down there.

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03 15 09 49 CDR That's the - You're seeing the terminator, not the horizon. Well - okay, that's the one we're going to burn on; you've got to get clear before we burn.

03 15 10 19 CMP What do you mean?

03 15 10 24 CMP Oh. Well, how far up are we - Oh, we've still got 9 minutes to go - 3 degrees per minute. What's the attitude here? 180? Pitch is - Let me read pitch off and then see ... yaw.

03 15 10 47 CMP You want a 180, though. You want a 180.

03 15 10 54 CMP Oh, it's - it's - Get - Wait a second. Well, it says 180.

03 15 11 00 LMP Roll 180.

03 15 11 01 CMP Oh, oh, oh, pitch 7, yes. Okay. You know what amazed me is that you can see in those shadows.

03 15 12 01 LMP Yaw zero then?

03 15 12 05 CMP Yaw is zero. She calls 7 more minutes. And - Let me see here, 1 degree at T_{ig} minus 3. 1 degree - What's this? Is that - is that it? 87:19, that would be 87:19, that would be 87:16 - in 4 minutes.

03 15 13 07 CMP Okay, I see the horizon. Yes.

03 15 13 14 CMP Right on the edge here - here - We're swinging in like this to it.

03 15 13 20 CMP It's like doing a loop.

03 15 13 34 CMP Look at down there, Bill: all those lines in a straight row like sand dunes.

03 15 14 27 CMP Okay, 2 minutes - minute and a half, about.

03 15 14 37 CMP I think you're about right.

03 15 14 45 CMP 1.2 degrees? You're wide after T_{ig} - At T_{ig} minus 3, at 16. Yes. Should probably be - it's probably going to be the horizon right here, because you're upside down.

03 15 15 43 CMP Got your checklist, Bill? Okay. No, I just wondered.

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03 15 16 06 CMP That's your logbook.

03 15 16 16 CMP Now. Let's see. No, wait a second - In 18 seconds.
Okay, how's it now?

03 15 16 26 LMP ...

03 15 16 28 CMP Well, you can say it's 1.2 degrees with - at T_{ig} minus 3.

03 15 16 34 CMP I think that's kind of hard to spot in there; don't
you think, Bill? Oh, you're 39; you're just a couple
seconds early.

03 15 16 51 LMP We're going the right way now.

03 15 16 53 CMP Yes, we're upside down going that way. And we're going
with the orbit.

03 15 17 29 CMP (Singing) Well, you still might be pitched down. It
might be that you burn like this. You might be burning
before you get to the top.

03 15 18 20 CMP I don't know, but I'll find out.

03 15 18 42 CMP I don't think this is a good place for this, Bill.
I'm going to put this - in here or some place. Huh?
No, this - Did you find it?

03 15 19 16 LMP Is that yours?

03 15 19 19 CMP No, I think that's mine; open it up and find out.

03 15 19 25 CDR That's Jim's there.

03 15 19 49 CMP Now is burn time - We got - little bit - about 10 -
15 seconds after burn time.

03 15 20 23 LMP Where's your checklist?

03 15 20 24 CDR I don't know.

03 15 20 26 CMP You didn't put it in my seat, did you?

03 15 20 55 LMP There's part of it - there's volume 1.

03 15 21 08 CMP Why don't you put that in your mailbox?

03 15 21 32 CMP I'm going to put this volume 2 away, too.

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03 15 21 44 LMP Why don't you keep up this -
03 15 22 50 CMP That's the chart ok.
03 15 23 09 CMP Got any emergency procedures to go over here? What
are you going to do? Okay.
03 15 23 32 CMP Just a minute, Bill; I'll give you a hand. Now, we
don't need these two things, right?
03 15 23 43 LMP No, I got the flight plan out.
03 15 24 50 CMP I don't think it's down there. That's just full of junk.
03 15 25 20 LMP Is that it?
03 15 26 46 CMP (Whistling)
03 15 27 36 CMP Well, who's got - who's got the Pentels? Anybody got a
Pentel?
03 15 27 42 CDR Here's one.
03 15 27 43 CMP Okay, we've got two. Okay, I want to - No, wait a
minute - I just don't want to - -
03 15 27 50 CDR Oh, I'm sorry.
03 15 27 51 CMP I just want to get it when we - tape here.
03 15 27 58 CDR 87:38:42.
03 15 28 46 CMP Yes.
03 15 28 49 CDR For God's sake, shift the right thing there, Jim, when
we go to arm the thing.
03 15 28 54 CMP Right. Proceed.
03 15 28 55 CDR We got a - we've got to ullage. Don't let me forget
that: 15-second ullage.
03 15 28 59 CMP Right.
03 15 29 06 CMP That's true.
03 15 29 07 CDR Alright, we're going to get another one.

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03 15 29 33 CMP Do you want to do a gimbal drive test?

03 15 29 36 CDR Yes, I think we might as well. Don't you?

03 15 29 40 CMP Okay, I'll ... Just the way we had planned it!

03 15 29 45 CMP Aren't you going to talk to the world?

03 15 29 50 CMP I don't know. That's the one, but it's not the final one.

03 15 29 57 CDR This is our retro burn, young man.

03 15 30 16 CDR Huh?

03 15 30 17 CMP What do you mean? 213 - 215 seconds, that turned out to be.

03 15 30 33 CDR Minus 40 feet on the DELTA-V_c in 2 seconds.

03 15 31 09 CDR When are you going to stop the water boiling - after the burn?

03 15 31 12 LMP Yes, I think we ought to get away from the ...

03 15 31 14 CDR Okay.

03 15 31 15 LMP We can stop it ...

03 15 31 19 CDR Well, let's just start it after the burn, then, huh?

03 15 31 22 LMP Huh?

03 15 31 23 CDR Stop it after the burn and not before it. Is that right?

03 15 31 25 LMP Yes. ...

03 15 31 32 CMP (Singing, yawn)

03 15 32 14 CDR That TV camera worked pretty well.

03 15 32 20 CMP There's one thing that I'm amazed at, and that is that the communications here are a lot better than I expected.

03 15 32 25 CDR Gees, they're great; knock, knock, knock. Let's not say anything until we're on the carrier, what do you say (laughter)?

03 15 33 58 LMP ... DELTA-V ...

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4 03 15 34 02 CDR Huh? I didn't hear you.

03 15 34 04 CMP 29 something - 25 - -

03 15 34 08 CDR DELTA-V nominal is - -

03 15 34 10 CMP Just make sure you can get the right one. Go ahead.

03 15 34 13 CDR 3532.

03 15 34 15 CMP You mean 3522.3.

03 15 34 20 CDR That's a big kick in the pants, you know it? 2000 miles
an hour - You can look at it that way - about - more
than that. We should be getting there in 4 minutes.

03 15 34 58 CMP (Singing)

03 15 35 23 CDR 2 minutes and 18 seconds, and we're going home? Is
that what you said?

03 15 35 26 CMP Yes.

03 15 35 30 CDR 01:38. Takes a long time though, doesn't it?

03 15 35 52 CDR How does the SPS look, Bill?

03 15 36 34 CDR Maybe that's what we're doing.

03 15 36 38 CMP Yes.

03 15 36 42 CMP Let's see, ... I probably could use ...

03 15 36 47 CDR You couldn't here.

03 15 36 48 CMP Huh?

03 15 36 50 CDR I don't think you could here; you could roll there, though.

03 15 36 59 CDR How does that look? Huh? Huh? Can you get them on an
OMNI with that?

03 15 38 25 CMP (Whistling)

03 15 38 55 CDR We're supposed to have him, Bill.

03 15 38 58 CMP Think you just did.

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03 15 39 01 CDR Houston, Apollo 8. How do you read? We got signal strength, Bill?

03 15 39 12 LMP Yes, it just probably takes them awhile to get squared away down there.

03 15 39 33 LMP Wonder what good it is to have that engine pointing at the moon that way?

03 15 39 37 CMP Pardon.

03 15 39 40 LMP We going to get it too hot?

03 15 39 43 CMP No.

03 15 39 44 CDR Hello, Houston, Apollo 8.

03 15 39 49 CC Go ahead, Apollo 8.

03 15 39 50 CDR Okay, do you want the computer?

03 15 40 04 CMP There won't be any ...

03 15 40 05 CDR Huh?

03 15 40 37 CC Apollo 8, we'd like to have the high gain, and when we get that, well, we'll start a dump, and we will start your updates.

03 15 40 43 CDR Okay, how about reading us the pad, and we'll try to get you the high gain. What do I have to do to get to the high gain, Bill?

03 15 40 49 LMP Give me a VERB 64, will you?

03 15 40 55 CDR Ken, read us off the pad; in case we can't get the dump in, we can still do it. Which way now?

03 15 41 02 CC Roger; I got them right here.

03 15 41 04 LMP Well, let's see; I'm trying to figure it out. Well, roll right for sure.

03 15 41 08 CDR Roll right.

03 15 41 12 LMP That would probably do it, the way you're pointing.

03 15 41 20 CC Okay, Apollo 8. The first pad I have is TEI 10.

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03 15 41 25 CDR Go ahead.

03 15 41 28 CC Alright, TEI 10, SPS G&N: 45597, minus 040, plus 157, 089:19:1567, plus 35186, minus 01512, minus 00520 - -

03 15 42 20 LMP A little yaw - -

03 15 42 21 CMP Hush!

03 15 42 22 CC - - 180, 007, 000, November Alfa, plus 00186, 35223, 318, 35018, 42, 0924, 253; Scorpii Delta, down 069, left 45, plus 0748, minus 16500, 12994, 36300, 146, 5005; primary star, Sirius; secondary, Rigel; 129, 155, 010, four-quads 15-seconds ullage; horizon on 3.2-degree mark at T minus 3; use high-speed procedure with minus Mike Alfa. Over.

03 15 44 18 CDR How you coming?

03 15 44 19 LMP Just stand by a second, Jim. Just stand by - just stand by

03 15 44 22 CMP Stand by 1 second.

03 15 44 26 LMP There you go. Turn the LOCK, UP. Got him locked up yet? Okay, you got it.

03 15 44 32 CDR You got the high gain now, Ken.

03 15 44 35 CMP Houston, Apollo 8. How do you read?

03 15 44 40 CC Loud and clear.

03 15 44 41 CMP Roger. Maneuver pad, TEI 10.

03 15 44 45 CC Apollo 8, we would like to have you go to POO and ACCEPT, and we would like to take the recorder at this time. Then I will copy your pad.

03 15 44 59 CDR Okay. You got it - -

03 15 45 00 CMP You have POO and ACCEPT.

03 15 45 02 LMP And the recorder.

03 15 45 03 CMP And you have the recorder.

03 16 09 47 CC Apollo 8, Houston. The tape recorder is yours. I have your PTC attitude.

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03 16 09 55 CDR Roger; go ahead.

03 16 09 58 CC Okay, PTC attitude will be pitch 10, yaw 45. This begins at 92 hours. Over.

03 16 10 11 CDR Is that pitch 10 and yaw 45?

03 16 10 14 CC Affirmative, and looks like that will go with the entry REFSEMAT; begins at 92 hours.

03 16 10 24 CDR Thank you. We've got a lot of good things going here. Every time I start to do that, somebody interrupts. You know, we've got to get a new REFSEMAT and the whole bloody works right after we - -

03 16 10 31 CC Apollo 8, would you put your UP TELEMETRY to BLOCK, please?

03 16 10 40 CMP In BLOCK.

03 16 11 03 LMP Okay, AUTO. Time me 10 seconds, somebody -

03 16 11 08 CMP Okay.

03 16 11 10 LMP When I say hack: 2, 3, 1 -

03 16 11 12 LMP HACK.

03 16 11 22 CMP MARK.

03 16 11 23 LMP Right on the money.

03 16 11 26 CDR What is the DELTA-V - Is it in there now? Let's double-check each other.

03 16 11 31 CMP DELTA-V_c.

03 16 11 32 LMP 3501.

03 16 12 27 CDR Boy, that sun is bright.

03 16 12 29 LMP Hot?

03 16 12 30 CDR Yes. Right in the eye.

03 16 12 35 CDR You want to put down pitch and yaw attitude, gimbal lock (laughter) for, you know, PTC: 10 and 45. Yaw is 45, Jim.

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03 16 12 52 CMP After 92 hours, though.

03 16 12 59 CDR Okay, you've got your burn time now there, Bill?

03 16 13 04 LMP No, I didn't get it. Oh, I got the - I haven't got the updated one yet; what have you got?

03 16 13 08 CDR We got to add 3.7 seconds to what they gave us because this motor hasn't been performing like it should.

03 16 13 14 LMP Yes.

03 16 13 16 CMP What's the pitch?

03 16 13 18 LMP 4 seconds.

03 16 13 19 CDR 10.

03 16 13 21 LMP So we got a burn time of 322 now?

03 16 13 29 CDR 3 -

03 16 13 41 CMP It's 318 -

03 16 13 43 LMP Plus 4.

03 16 13 44 CDR 318 plus 4.

03 16 13 51 LMP So, we're going to - You still going to ignite on 19:15?

03 16 13 55 CDR Uh huh.

03 16 13 57 LMP And it would be 322?

03 16 14 00 CMP That'd be 19:16.

03 16 14 02 LMP A second later?

03 16 14 05 CMP That's what you gave me, wasn't it?

03 16 14 06 LMP 16, because it's 0.67.

03 16 14 10 CMP Oh, okay.

03 16 14 12 LMP So it's 67 - 0.57 you mean?

03 16 14 15 CDR 15.67; make it a second.

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03 16 14 18 LMP Okay.

03 16 14 32 LMP Okay, shutdown will be at 40 then, right?

03 16 14 37 CMP 37. I have 21.

03 16 14 42 LMP I mean emergency shutdown will be at 40.

03 16 14 43 CDR Yes, oh.

03 16 14 44 CMP Yes, okay.

03 16 14 46 LMP Starting at 89:19:16, burning 322, shutting down at -

03 16 14 51 CDR 2 seconds early. Go ahead.

03 16 14 57 CC Okay. On the helium tank TEMP's: that's not recorded on LOW bit rate, and looking over our tape dumps, most of this stuff we have on the backside there is LOW bit rate. So we won't be able to give you an exact number, but looking at what we have every time we go out of sight and come back over the hill, it looks like you can expect about 82 to 84 degrees as a nominal temperature.

03 16 15 21 CDR Thank you.

03 16 15 22 LMP Shit, we got a lot to do.

03 16 15 23 CDR Huh?

03 16 15 24 LMP That's the worst one we've had here.

03 16 15 27 CDR That's worse?

03 16 15 40 LMP Well, you know the colder, the better.

03 16 15 43 CMP They last longer, huh?

03 16 15 49 CMP Are you going to pull out PITCH 2 and YAW 2 circuit breakers?

03 16 15 52 CDR Yes.

03 16 16 05 CDR I'm trying to get in place so you can get some sighting going.

03 16 16 12 CMP Get some sighting going?

03 16 16 13 CDR Sighting - you know, for P52.

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03 16 16 18 CMP Oh, P52 - Yes, we're going into it. North is down.
03 16 16 24 CDR Are we? Man, look at that. There you go.
03 16 16 30 CMP Huh?
03 16 16 31 CDR Get a P52, will you? Let me have a flight plan.
03 16 16 39 CMP Do you need the book?
03 16 16 48 CMP Which way is my optics pointing?
03 16 16 51 CDR Pointed at the - pretty - should be - -
03 16 16 53 LMP What is our spacecraft weight?
03 16 16 55 CMP Have you stopped the rate?
03 16 16 58 CDR Bill, Jim's got it. Yes.
03 16 17 00 LMP You got it, Jim?
03 16 17 01 CMP Yes.
03 16 17 02 CDR 45 something, Bill.
03 16 17 03 LMP 45, okay -
03 16 17 04 CMP 45597. Okay, may I - -
03 16 17 07 CDR Yes, ENTER that. You didn't get it?
03 16 17 13 CMP Oh, you did ENTER it?
03 16 17 14 CDR Yes, I ENTERED it.
03 16 17 15 CMP Okay, I'm sorry.
03 16 17 20 LMP Based on helium pressure, I get 46 - 50.
03 16 17 24 CDR Based on what?
03 16 17 26 LMP Helium pressure.
03 16 17 27 CDR Oh, good.
03 16 17 33 CMP (Singing)

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03 16 17 37 CMP 27. 27 is Alkaid.

03 16 18 31 CMP 31. 31 is Arcturus.

03 16 18 36 CDR Well, you got two good ones, huh?

03 16 18 37 CMP Yes.

03 16 18 57 IMP We would have enough there to blow it down, wouldn't we?

03 16 19 00 CDR Just a minute, let me add it.

03 16 19 02 IMP Oh.

03 16 19 18 CMP All balls; want to record that?

03 16 19 23 CDR Yes, I've got it.

03 16 19 26 CMP Proceed. Gimbal angles: minus three zeros 40, plus four zeros 2, plus three zeros 48.

03 16 19 42 CDR Okay.

03 16 19 43 CMP Can I torque?

03 16 19 44 CDR You may. Torque that way.

03 16 19 47 IMP I'm not sure we can blow it quite all the way. We can blow it for the time to get - I think we can blow it for over - for about 190 seconds down to 70 psi; if you want to go a little lower, you might as well go to chug; why, you can probably do it all the way.

03 16 20 05 CDR Okay.

03 16 20 09 CMP It's finished.

03 16 20 11 CDR Okay.

03 16 20 12 IMP If we do have - if we do get one tank stuck, I'm going to shut the other one off, and blow them both off together.

03 16 20 18 CDR What do you mean by that, Bill?

03 16 20 20 IMP If we get - one tank's not getting pressurized, I'll shut off the other one, so you don't get a big DELTA-P between them.

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03 16 20 26 CDR Alright, good.

03 16 20 29 CDR Okay, let's go - Start through the checklist. Shall we?

03 16 20 36 CMP Okay, first of all, the external DELTA-V, right?

03 16 20 39 CDR I'm getting my little library squared away here.

03 16 20 53 CMP Want me to go through P30?

03 16 20 56 SC (Yawn)

03 16 20 57 CMP Because then you can start right then with P40. Okay, here's the burn stuff.

03 16 21 01 CDR Alright, go ahead.

03 16 21 09 CMP 89:19:1567.

03 16 21 12 CDR Right.

03 16 21 14 CMP Okay, plus 35186.

03 16 21 16 CDR Right.

03 16 21 18 CMP Minus - what was that? - 01512.

03 16 21 21 CDR Right.

03 16 21 22 CMP Minus 00520.

03 16 21 24 CDR Right.

03 16 21 25 CMP Okay.

03 16 21 31 CMP Okay, 6 11 - this is not applicable here, okay?

03 16 21 37 CDR Yes.

03 16 21 38 CMP Counting down.

03 16 21 39 CDR Alright.

03 16 21 43 CMP If you set it at three counting up, I think you'd have it. Wouldn't you?

03 16 21 45 CDR Yes.

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03 16 21 57 CMP (Singing)
03 16 22 02 CDR We've got to get some of that Murine out; my eyes are - -
03 16 22 04 CMP Yes, mine have been bothering me, too.
03 16 22 20 CDR Okay, try it again.
03 16 22 25 CDR Okay?
03 16 22 26 CMP Yes.
03 16 22 28 CDR You alright?
03 16 22 29 CMP Proceed. 87, 00, ENTER.
03 16 22 34 LMP You want to take a look at this, too?
03 16 22 36 CDR No, I don't think so; it just keeps you guys from seeing it, doesn't it?
03 16 22 39 LMP Yes, a little. Let's just - do you ever want it?
03 16 22 42 CDR No, I don't ever seem to have ever - -
03 16 22 43 LMP It's in my stowage bag if you think you - if you ever want to get it.
03 16 22 46 CDR Alright, let's check the DAP.
03 16 22 48 CMP Well, let's - -
03 16 22 49 CDR Oh, is that in the checklist?
03 16 22 50 CMP Yes.
03 16 22 52 CDR Alright, then let's go with Bill.
03 16 22 53 CMP The checklist.
03 16 22 54 LMP Have you completed P30?
03 16 22 56 CDR Yes.
03 16 22 57 LMP Okay, let's go to P40: P30, complete; CMC, ON.
03 16 23 04 CDR CMC is ON.

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03 16 23 06 LMP ISS, ON; spacecraft - SCS, operating.
03 16 23 08 CDR Right.
03 16 23 10 LMP Test the CAUTION/WARNING lamp; EMS MODE, STANDBY.
03 16 23 13 CDR Yes.
03 16 23 14 LMP FUNCTION, DELTA-V set.
03 16 23 15 CDR Right.
03 16 23 16 LMP And have you set 1586.8?
03 16 23 18 CDR Right.
03 16 23 20 LMP Okay, EMS MODE, STANDBY; DELTA-V set; set DELTA-V_c.
03 16 23 25 CDR 3501.8.
03 16 23 27 CMP I'll check: 3501.8.
03 16 23 30 CDR Okay.
03 16 23 31 LMP EMS FUNCTION, DELTA-V; NONESSENTIAL BUS, MAIN B; cycling
cryo fans - good a time to do it as any.
03 16 23 48 LMP BMAG MODE, three, RATE 2.
03 16 23 50 CDR RATE 2.
03 16 23 52 LMP DELTA-V_{cg}, CSM.
03 16 23 53 CDR CSM.
03 16 23 54 LMP CMC MODE, FREE.
03 16 23 55 CDR FREE.
03 16 23 57 LMP AUTO RCS select, 16, as required for ullage.
03 16 23 59 CDR Okay, we only need 12, I think. Right?
03 16 24 04 LMP 12?
03 16 24 06 CDR We don't need the Y thrusters.
03 16 24 08 CMP Four-jet ullage?

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03 16 24 14 CMP (Yawn)
03 16 24 15 CDR You've got all - We got all we need.
03 16 24 18 LMP Okay. Load the DAP.
03 16 24 19 CMP Load the DAP. Okay, four jets: one, two, three, four jets. Okay?
03 16 24 29 CDR Right.
03 16 24 32 CMP 45601, 45597. Good.
03 16 24 36 CDR Right.
03 16 24 37 LMP Just going over Copernicus.
03 16 24 41 CMP Minus three balls 40, plus two balls 157, right?
03 16 24 46 CDR Right.
03 16 24 47 LMP I don't know - Is that right?
03 16 24 48 CDR Yes.
03 16 24 53 CDR Okay, DAP is loaded.
03 16 24 56 LMP Okay, ROTATIONAL CONTROL POWER NORMAL, both, AC/DC.
03 16 25 01 CDR NORMAL, AC/DC.
03 16 25 02 LMP Got your DET set?
03 16 25 04 CDR Set and counting.
03 16 25 06 LMP VERB 37, ENTER; 00, ENTER.
03 16 25 07 CMP Yes, we have that.
03 16 25 09 LMP Spacecraft control, CMC and AUTO.
03 16 25 12 CDR CMC and AUTO.
03 16 25 13 LMP VERB 62, ENTER.
03 16 25 16 CDR VERB 62, ENTER.
03 16 25 17 LMP VERB 49, ENTER.

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03 16 25 19 CDR WERB 49, ENTER.
03 16 25 21 LMP 6 22: load desired maneuver pad gimbal angle.
03 16 25 25 CDR 180.
03 16 25 26 CMP Plus 1800.
03 16 25 27 LMP Pitch is plus 7 - -
03 16 25 28 CMP Zero, zero.
03 16 25 29 LMP - - 007, right?
03 16 25 30 CMP Okay.
03 16 25 31 LMP Yaw is all zeros.
03 16 25 32 CMP Okay.
03 16 25 33 LMP Proceed?
03 16 25 34 CDR Proceed.
03 16 25 35 LMP 50 18: auto maneuver - you want it?
03 16 25 37 CDR Yes.
03 16 25 38 LMP Okay, CMC and AUTO.
03 16 25 40 CDR Right.
03 16 25 41 LMP Okay, RATE 2, proceed.
03 16 25 44 CDR Okay.
03 16 25 50 CDR (Singing, yawn)
03 16 25 52 LMP You know, it might be worth putting our flight plans up.
03 16 25 55 CDR I got mine up.
03 16 25 56 CMP I've got to get down there and take a boresight star, though.
03 16 26 45 LMP We'll run over that entry tomorrow once and Thursday
once. Okay?
03 16 26 49 CMP Okay.

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03 16 26 50 CDR Okay.

03 16 26 52 LMP You know, this kitchen down here's a pretty good deal.

03 16 26 54 CDR Yes, ...

03 16 26 58 CMP Brings sort of homey atmosphere here.

03 16 27 02 LMP Yes. How do you like your cryo, medium or well?
Let me know when you get there.

03 16 27 11 CDR It takes a long time to get there.

03 16 27 12 LMP Okay.

03 16 27 17 CDR I'll tell you what, I'll hurry it up so Jim can check
the boresight star while we're in the dark.

03 16 27 22 CMP No, don't forget I got the earth - or the moon. If
you're going back again, will you make a meal?

03 16 27 53 LMP That's a pretty good checklist now, isn't it?

03 16 27 55 CMP Yes.

03 16 28 14 LMP Can you still see the earth over there?

03 16 28 16 CDR Yes, very distinct - half the earth.

03 16 28 22 LMP I thought someone told me we weren't going to have
any when we - hardly any of the earth when we came back.

03 16 28 27 CMP Well, we won't I don't think, because we're going
to be way out - -

03 16 28 29 CC Apollo 8, we would like to have the tape recorder
for about 5 minutes for one last look.

03 16 28 34 CMP Roger, Houston. You're getting it.

03 16 28 36 CDR Does that mean they need the high gain?

03 16 28 38 LMP Yes.

03 16 28 40 CDR Well, I'll stop right here then.

03 16 28 43 LMP Well, you're getting - -

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03 16 28 44 CC Thank you. And I guess we still have a cryo stir ahead of us, and we've checked your PIPA bias, and there's no change.

03 16 28 51 CDR Roger; and we're stirring the cry - -

03 16 31 48 LMP Well, now they're moving again.

03 16 31 56 LMP Can y'all hear those - -

03 16 31 57 CC Apollo 8, the tape recorder is yours. We have your double-umbra update - -

03 16 32 04 CDR Okay (laughter).

03 16 32 05 CDR I'll get it.

03 16 32 06 CC - - 89:07:15.87.

03 16 32 08 CDR Roger; copy.

03 16 32 12 CMP What's a double umbra?

03 16 32 13 CC Roger; and no change on your AOS time.

03 16 32 20 CDR Say that again, will you, Ken?

03 16 32 21 LMP Can't believe it.

03 16 32 24 CC There's no change on your AOS time.

03 16 32 29 CDR Yes, what was it?

03 16 32 32 CMP Oh, I got it. I got it.

03 16 32 35 LMP It was in the flight plan. I read it - -

03 16 32 36 CC Okay, with TEI: 89:28:39.

03 16 32 37 CMP 89:28:39; 89:28:39.

03 16 32 40 CDR Thank you.

03 16 32 50 CMP Yes, they might as well not build simulators any other way than they've been doing it. You're laying on your back in this thing no matter what you do.

03 16 32 57 LMP Think so? I feel like I'm sitting straight up.

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